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L3: Entry 5 of 8   File: USPT   May 27, 2003

DOCUMENT-IDENTIFIER: US 6571234 B1
TITLE: System and method for managing online message board

Abstract Text (1):
Queries and postings made to an online electronic message board are managed by a
number of community and customized software search robots. The robots interact with
subscribers to access, retrieve and post messages according to content groupings
and classifications that reflect the collective shared interests, desires, etc., of
such subscribers. Because the information is already pre-classified and indexed in
such fashion, subscribers are given rapid access to key information that is most of
interest to them, enhancing their overall experience with the system.

Brief Summary Text (4):
The present invention relates to managing queries and postings made to an online
electronic message board. The invention is especially suited for permitting
subscribers to interact with software search robots to access, retrieve and post
messages according to classification criteria that mirror the interests, desires,
etc., of such subscribers. These features enhance the user's experience with the
online message board system, thus increasing the user's interaction time with such
system.

Brief Summary Text (15):
Third, while the user is at the second stage of the search process, he/she is
limited to seeing the messages in display area 110 as they are stored at the
website; in other words, indexed by Topic, Author, Date, etc., but with no
additional screening/filtering capability. This means that the user is sometimes
(depending on popular the topic is) forced to browse through hundreds of messages
(postings) to find an item of interest. While the prior art does allow some
searching capability within this second stage, it is relatively primitive in that
it cannot transcend the logical area bound by messages for Company A; in other
words, it is not possible to search across all subjects for a keyword of interest.
Again, this means that the user is not receiving complete information, and this
detracts from the appeal of such system. Also, the search constructs possible with
the prior system are very limited, and do not allow for advance filtering
techniques, so that, for example, the user can use multiple filters to find
content. For instance, locating postings by a specific author having specific
keywords is not possible at this time. Moreover, within this second stage, the user
must formulate and define his/her own search queries for each new query, and then
pass this request to the service provider, where it is processed to return relevant
hits to the user. This can take time, of course, and because this portion of the
interface has no "memory"--in the sense of remembering the user's predilections and
search interests/constructs--the user is required to waste time each time he/she
visits this stage to re-formulate the search query to retrieve messages of
interest. It would be far more advantageous, for example, if the interface could
learn, remember, and automate common query and filtering criteria from the user.

Brief Summary Text (31):
Yet another related object is to permit a user of an online service to interact
with search robots located on an internet server to help formulate, execute and
remember search queries of interest to such user.

Brief Summary Text (32):
A preferred message management system of the present invention can be used with an
online electronic message board, and generally includes: a content sorting routine
that runs on a computer associated with the message board system for sorting
electronic messages and storing them such that they are searchable by users
according to information categories. A second query handling routine also executing
on this same computer is configured so that: (i) it can receive a user query
initiated within a user query interface operating on the user's computer system,
and (ii) it can locate a selected set of electronic messages in response to the
user query; and (iii) it can transmit such selected set of electronic messages to
the user query routine interface in a form suitable for perceiving by the user. The
query handling routine is preferably implemented as a set of community and
customized search robots. Thus, for ease of searching, reviewing, etc., the message
management system interacts with the user using only a single screen display
portion of the user query interface.

Brief Summary Text (33):
As noted above, the user query is based on predefined query parameters available to
all of the users within the user query interface, so that they correspond directly
to the predefined information categories, and everyone using the message board can
access such messages using community based robots. A user query can also be
handled, however, when it is instead based on customized query parameters for a
particular user, so that a customized search robot on the message management system
is invoked for locating the relevant electronic messages. These latter types of
electronic messages may or may not be made available to all users of the system,
depending on the message board system provider's preference.

Detailed Description Text (4):
First, to keep the online service with current information of interest to the
community of users of such service, a number of independent software content
extraction/posting robots 230 perform raw data content extraction, on an as-needed
basis, from content sources 225 using a set of program routines suitable for
execution on server 220. Community search robots 231 and customized search robots
232 help build predefined collections of message postings from such raw content,
based in accordance with broad and narrow guidelines as discussed in more detail
below. These predefined collections of message postings provide a significant
improvement over the prior art, which, as mentioned above, merely uses raw content
feeds for users. Instead of having to manually review and sort out which newsgroups
may be of interest, the present system does all the work for the user, and breaks
the data down into clear, manageable categories that are easily understood, and
more importantly, logically structured to mirror interests and organizational
constructs within the community of users.

Detailed Description Text (6):
Generally speaking, the term "postings" refer to content/messages generated by
human users. Contributions from subscriber-user postings of messages are handled by
posting logic routine 235. Finally, a database routine 240 executing on server 220
maintains a database of data items 242, and constructs indexes 241 of the same in
accordance with rules, instructions and feedback from the service provider, and in
cooperation with community search robots 231 and customized search robots 232.

Detailed Description Text (8):
Connected to server 220 across a data link 245 (such as a telephone line) is a user
computer system (not shown) running a conventional web browser (also not shown) for
viewing and interacting with programs and data located at a website maintained by
server 220. The details of the user's computer system and web browser are not
material to the present invention, and are therefore not discussed at length here.
The only important criterion is that such web browser and computer system have the
capability of handling Java.TM. based applets (or similarly capable code) which

applets contain software code associated with permitting the user to
operate/interact with interaction window 250, community <u>search robots</u> 231,
customized <u>search robots</u> 232, and posting logic 235. In general, interaction window
250 is a highly flexible, integrated interactive window that facilitates message
<u>search query</u> formulations, message retrievals, message postings, etc., on the part
of the user. In response to such message <u>queries, search robots</u> on server 220
return a number of "hits" or matching records 251. The manner in which interactive
window 250 assists in these operations and coordinates with posting logic 235 and
<u>search robot</u> 230 is discussed in more detail below in connection with FIG. 3.

<u>Detailed Description Text</u> (9):
Returning to the operation of the <u>search robots</u> in FIG. 2<u>: search robots</u> are well-
known in the art, and a basic variation of these can.be found in conventional
online search engines operated by such online providers as Yahoo!, Excite, AOL,
etc. These <u>search robots</u> can be easily modified to perform various tasks associated
with the present inventions. In particular, a first kind of extraction robot 230 of
the present invention periodically retrieve content (i.e., material that may be of
general interest to the subscribers to the online service provider) from outside
source such as UseNet and/or other online message board systems. The content is
"extracted" from these sources according to set of rules, filters or criteria
specified by the online provider, and/or gleaned from community based traffic
monitorings as noted below. This process can be highly automated so that, for
example, a particular <u>search robot</u> can be instructed to search at a particular time
of the day for information concerning a particular company at a particular third
party internet server. The benefits of this approach include the fact that the
message board system 200 provides up-to date, comprehensive content on a variety of
subjects.

<u>Detailed Description Text</u> (11):
In practice, content extraction robots 230 are used initially by the service
provider to construct an initial content base before the message board system is
opened up for subscribers. This ensures that the users of such service will have a
preexisting library of information to draw upon when the service is first used.
Before this point, however, the information is broken down and sorted into a number
of subject matter areas, which subject matter areas represent logical collections
of content according to a (potentially different) set of service provider (or user)
specific rules, filters, criteria, etc. These logical groupings are based both on
perceived interests of the subscribers of the online service provider, and the
requirements of database management routine 240. For example, a service provider
may request that a <u>search robot</u> 230 extract content (in this case, posted messages,
press releases, news reports, etc.) about companies in a particular industry from a
particular discussion board and/or news site. After receiving content from such
source, it can be stored in database 270. At the same time, or after this point,
this information can be divided according to a sorting mechanism that includes such
groupings as (1) stock trading related information (i.e., stock price, patterns,
fundamentals, and the like); (2) product related information; (3) marketing related
information; (4) sales/financial information; (5) author/source; (6) date, etc. The
information in these subject matter areas is then broken down further into class
and sub-classifications as desired, and then stored as additional indices 261 by
database management routine 240. This process is dynamic, iterative, and
continuous, so that a number of community/custom <u>search robots</u> may be
simultaneously parsing database 270 to create, update or remove their associated
subject matter area/class/subclass indices. In contrast to community <u>search robots</u>
231, whose efforts result in compilations/indices usable by the community as a
whole, customized <u>search robots</u> 232 create logical collections of messages based on
individual user filtering criteria. To ensure that the independent functionality
provided by customized <u>search robots</u> 232 does not overwhelm server 220, only a
limited number of such robots are made available to subscribers.

<u>Detailed Description Text</u> (12):

These implementations are but examples, of course, and the actual number of subject
matter areas/classifications/subclassifications, etc. will be a function of the
subject matter in question, the needs/desires of the target subscriber base of the
service provider, the capabilities and storage of server 220, and similar
considerations. As discussed below, search robots 231 and 232 also have the
capacity to be programmed with feedback information gleaned concerning the
interests of users of the online service as they post entries through posting logic
235, and this feature permits them to further define and automatically create
content subject matter areas that are of interest to such users.

Detailed Description Text (13):
Database management routine 240 is generally responsible for coordinating data
storage and retrieval operations. As data is received (in the form of outside
content or user postings) it is stored in record form in one more data files 270 in
conventional fashion. In addition, however, logical indexes 261 are also created by
database management routine 240, so that such records are easily accessible in
accordance with the aforementioned clustering/sorting mechanisms. In general, the
structure and operation of database management routine 240 is fairly conventional,
and therefore any contemporary server database management software package (i.e.,
such as DB2) can be used with the present invention if properly configured to
interact with the various extraction and search robots and posting logic 235.

Detailed Description Text (18):
At step 302, if there is no query filter already in place, the user is permitted to
activate one of the subject matter area query buttons, so that a detailed subject
matter area query menu is presented. For example, the user may be interested in
looking at message entries posted under the broad subject matter area "Stocks."
Depressing this subject matter area query button causes the subject matter area
query menu to display a number of classifications falling under such group subject
matter, such as, in the case of a Stock subject matter area query, classifications
corresponding to companies sorted alphabetically. At this step 303, therefore, the
user can select messages falling under the classification "Company A" for example.
Alternatively, in lieu of looking under subject matter area "Stocks," the user can
instead activate a "Custom" subject matter area query button, and formulate a new
filter or search query based on such subject matter area filtering. In any event,
at step 304, in response to the user specified search parameters, a request is sent
to community search robot 231 (or customized search robot 232) at server 220, which
in turn queries database management routine 240 to retrieve entries meeting the
user's search/filter criteria. Because these entries are already indexed according
to predefined subject matter area/class/subclass indices 261, a group of the same
matching the user's query criteria are easily and rapidly located. These entries
are then transmitted to the user's computer system, and presented in abbreviated
listing format (i.e., author, date, excerpt from entry, etc.) within a group
listing area of the interactive window interface at step 305. When the user selects
one of the retrieved entries from the group of messages at step 306, the full text
of the message is displayed in a separate message content detailed display area at
step 307 where it can be viewed in its entirety without losing view of the
retrieved message group listing area.

Detailed Description Text (29):
In any event, at this time, with menu 316 displayed, a second, more refined
searching operation, or query, can be effectuated by the user by selecting any one
(or more) of the query parameters 317, so that message falling under such
classification can be retrieved. This query is sent to community search robot 231
as noted above, so the user can query all the records in database 242 on server
220. This additional level of filtering and selection gives the present invention
an additional advantage over the prior art because, again, this operation can take
place without changing levels, screens, etc. Moreover, very few prior art systems
known to applicants permit searching of messages in the first place; this means
that records in the message database are usually reviewed in serial, sequential

fashion which is slow and unproductive. More importantly as messages are extracted
and posted, they are continuously built as collections of messages falling within a
particular predefined subject matter area/class/subclass index, corresponding to
the message query filter parameters 317 presented in the user interface. In other
words, when the user picks the "Rounded Top" sub-class noted in FIG. 3b, there is
already a predefined index 241 that has been built to contain all the relevant
messages corresponding to this subclass/filtering selection. Notably, within the
server database 242, messages grouped under the subclass "Rounded Top" are placed
there according to sorting logic as mentioned above, so that for example, when
responding to a message in the "Rounded Top" sub-category area, the response itself
would also fall within this area, despite the fact that it may contain no mention
of this term anywhere in the response.

Detailed Description Text (32):
As the appropriate group of messages are located by community search robot 231, a
visible listing of the same is provided to the user in a second display area 320,
in what can be thought of essentially as a retrieved message listing display area,
or a message group detail area. In this area, each message matching the user-
selected filter is identified by an entry 325 that lists such data as subject,
author, date, and/or a few words excerpted (usually the first few words) for such
message. As they are all generally related to the same logical "topic" (by virtue
of the query operation) it is not necessary at this stage to waste display space in
this area by including a description for this parameter. After all the matching
entries of the group are retrieved, they can be sorted in conventional fashion
(i.e., by date, author, etc.) by activating sorting buttons 330 above such entries.

Detailed Description Text (33):
At this point, the user can use any one of a number of different commands to
perform operations with the messages 325 listed with an entry in area 320. First,
the user can discard the retrieved messages. A new search query can be executed,
simply by selecting another one of the filter parameters 317 in message query menu
316, and without ever leaving interface 310. Alternatively, a complex search query
might be executed by selecting more than one query filter parameter 317, so that
only entries satisfying both criteria (i.e., two overlapping logical groups of
messages) are retrieved by community search robot 231. While this is more slow
(because it involves more effort on the part of search robots on the server to
coordinate two searches) and may reduce usability, it can be included if desired
for limited circumstances.

Detailed Description Text (37):
An additional subject matter area control button 312 labelled "Custom" includes a
menu of control options reserved for customizing the interface to the user's
particular needs and tastes. This menu, shown in FIG. 3c, can provide a variety of
additional functionality. For example, it provides an additional list of filtering
options that are used as a logical screen or overlay over other search and query
operations performed under other subject matter areas 312. For instance, as noted
earlier, a user might elect to always ignore postings by a particular author,
regardless of their relevance to a particular query made under a particular subject
area. These postings, then, can be made to never appear to the user in message
listing rare 320, even if they otherwise match the search logic used by the user
for a particular search operation. Alternatively, they can still be retrieved by
marked with some indicia as noted earlier. Similarly, the user might compile a list
of his/her favorite authors, and by selecting this entry in the menu area 315, all
of this person's entries might be displayed in message listing area 320.

Detailed Description Text (38):
Other more complex searching features or intelligent content groupings can be
implemented by providing a limited number of dedicated, customizable search robots
232 on server 220 to each member of the community. These dedicated search robots

232, unlike community robots 231 that create the shared collections of message postings identified under general subject matter headings, serve particular users individually, and coordinate with database management system 240 to create customized collections of data of interest to the particular user based on regular polling and reviewing of data records 271. As one way of controlling the creation and use of customizable search robots 232 so that they do not overload server 220, individual users can be charged for exceeding a pre-defined number of customized filtering options. Other functions and variations for the "customize" feature will be apparent to those skilled in the art.

Detailed Description Text (51):
Content extraction and posting routine 415 interacts with a series of software search robots 430. For a particular content site #1, one or more search robots extract and post content (messages, news postings, image data, audio data, etc.) in accordance with the sequence and logic specified in the data filters passed on by content extraction and posting routine 415. The raw content extracted by search robots 430 is passed on to database interface 440, where it is broken up and categorized as described briefly above, and in more detail below. The postings made by search robots 430 are also passed on by database interface 440 as explained further herein. As such software search robots are well-known in the art, they are not described in detail·herein.

Detailed Description Text (58):
The other components of message retrieval/indexing system 500 include a user query interface routine 530, and·a user posting interface routine 535. These routines are generally responsible for interacting through the data link to field queries and postings channeled through user interface 300 (FIG. 3b) running on the user's computing system. All queries, commands and postings from the user are translated into a form suitable for handling by database management routine 540. For the most part, these routines can be implemented in any well-known manner to coordinate with queries, commands and message postings sent by the user, and to return relevant data records from the database management routine 540 in response to such queries and commands. In a preferred embodiment, as noted earlier, a series of community search robots 531 and customizable search robots 532 are used to coordinate between the user and database management routine 540 as discussed above in connection with FIG. 3b. While these search robots are shown as part of user query interface 530, it is apparent that they can be implemented in many different variations that are either separate and/or integrated with database management routine 540 to effectuate the operations discussed above in connection with FIGS. 3a to 3d.

Detailed Description Text (61):
This approach has the advantage of anticipating the likely possibility that the user will eventually, during some portion of the session, also wish to query such subject matter areas. Thus, to some extent, the system can speculate and/or predict the user's behavior (based on commonly observed characteristics of the users of the system) and then cache these message entries locally in compressed form. If these materials are easily loadable within the interface (because decompression on the user's end is typically a fast process compared to a transmission process for the same size file) the user experiences a significantly reduced response time from the normal, linear, query--search--return process described earlier, and which is prevalent in prior art message board systems.

Detailed Description Text (68):
The benefits of tabulating this information are many, including the fact that: (1) New group/subclassification indexes can be recommended to the service provider for inclusion in user interface 300 (FIG. 3) and/or automatically added to such user interface by studying what categories are popular with a particular community of users; conversely, unpopular categories of data can be eliminated or pruned to reduce clutter on the interface seen by the user. Thus, the system can learn the interests of its users, and build content classifications in accordance with such

feedback. (2) User interface 300 (FIG. 3) can be altered dynamically so that subject matter headers 312, or query parameters 317, can be re-arranged based on their popularity. In other words, the interface can be made to ergonomically self-tune itself so that more popular items appear earlier in the menu, or at shallower branches of the tree menu 316, minimizing the burden on the user to find subjects of interest. (3) Extraction control by prioritization routine 418 (FIG. 4) can be tailored based on data in tabulation databases 580-583, so that, for example, content is retrieved by the <u>search robots</u> in proportion to the interest level of the community. This permits a message board system to learn the interests of its users, and then located and extract content in direct relation or proportion to such content's popularity within such community. (4) New areas for content extraction can be gleaned from databases 580-583 and passed in the form of an auto-generated community based query 404 (FIG. 4) based on analysis of keyword extractions of user message postings. Again, by studying the messages posted by its own users, the system can learn to find information most likely to retain the interest of such subscribers. Thus, subscribers can be given more of the information they have already expressed a strong interest in. (5) Statistics on user messages, queries, and customizations can be packaged for general community consumption as an automatically generated "hot item" list (see FIG. 3D). Thus, users can immediately be alerted to new topics, subjects, authors, useful interface customizations, etc., that are of current interest, further increasing the appeal of the system, since now users can learn and benefit from individual and aggregate behavior, interests of the community. (6) As noted earlier, decisions on how to build fast, pre-compressed files of popular subject matter areas can also be easily determined from studying community wide interest, as expressed in queries, postings, etc. This results in users getting more of the information they want, and faster. (7) Demographics information concerning the subscribers can be indirectly gleaned from observing their queries and responses as posted to the system. This information, too, can be used for determining appropriate advertisers, advertising, etc. For example, in a medical based community, if message traffic suggests a strong following and discourse in certain types of medications (say brand X), this permits the service provider to more accurately identify, select and target appropriate advertisers, ads, etc., tailored to such audience. Furthermore, even the initial selection and setup of subject areas, classes, sub-classes, etc., can be designed based on marketing research based criteria, so that the mere selection of a particular subject area/class combination by a subscriber can be correlated immediately with other typically associated/expected interests of such user, user demographics, user financial profiles, etc. This is less intrusive and more likely to result in accurate user profiling than conventional lengthy online surveys, where people are inclined to provide incomplete and/or inaccurate information because of privacy sensitivities. In other words, a particular user's selections of materials can be monitored and compared against reference data for a normalized group of individuals (i.e., from market or focus group research) to determine a probable education level, income, assets, and the like for such individual. This method is more accurate in collecting true user profile information, since it is constantly refined, updated and improved (based on user selections) and does not require explicit input from him/her that would cause them to be less forthcoming about their true profile characteristics. This, in turn provides a tool for service providers to construct a more accurate profile of his/her subscribers, so that content, ads, etc., can be more effectively managed and tailored to the community as a whole.

<u>Detailed Description Text</u> (71):
Operation of Content Search System, including Community and Customized <u>Search Robots</u>

<u>Detailed Description Text</u> (74):
Therefore, when a user first interacts with message board system of the present invention, a user interface routine 640 at server 220 (FIG. 2) downloads the user's previously defined interface 300 (FIG. 3b), where it executes as a java based

applet within the user's browser program. At this point, the user can execute a
query at step 645 along the lines described above, using any one or more of the
query parameters 317, or some other command (i.e., one of the operations specified
in connection with entries 325). This query and/or command is transmitted upstream
to the server, where it is decoded at step 650 by the user query interface, and, in
the case of a query, handed off the appropriate community or customized search
robot. These queries are also monitored at step 655 as described earlier to glean
query tabulating information.

Detailed Description Text (75):
The search robots then retrieve the appropriate group/subclass messages in
accordance with the user specified search criteria at step 660. They are then
downloaded to the user's system where they are accessible to the user through the
interface 300. At this point, at step 665, the user can perform any of the
aforementioned operations discussed in connection with FIGS. 3a-3d, such as by
posting a new message (in which case the process loops back to step 605), or by
posting another query/command (in which case the process loops back to step 645).
The message postings/queries are tracked in accordance with grouping/classification
rules 670, which, as explained above, preferably should change dynamically based on
subject areas of interest to the community members.

Detailed Description Text (76):
Again, the behavior and prioritization of searching/posting performed by community
and customized search robots can be adjusted based on the status of a particular
community member. In other words, members having a higher status on the online
message board system (achieved through higher subscription fees or usage for
example) can be afforded faster treatment, or have their queries/postings handled
before lower status members. Again, in this manner, members of the community can be
treated in accordance with a level of demonstrated interest and seriousness in the
affairs of the community as a whole, thus increasing the chances that such members
will be retained by such service provider.

CLAIMS:

19. The system of claim 11, wherein said content extraction program also locates
and extracts selected information from one or more online network servers in
response to specific subscriber requests using customized search robots associated
with said specific subscriber requests, such that customized classification schemes
for content are generated for said specific subscriber requests.

40. A method of building message content for an online network server having a
database of information items accessible by a number of online users, said method
comprising the steps of: (a) locating and extracting selected information from one
or more remote online network servers, which selected information matches a
predetermined search criterion and is associated with one or more information
categories of a classification scheme; (b) sorting both said selected information,
as well as separate message items received from the online users, in accordance
with said classification scheme so as to create a plurality of data files of sorted
message items, each of said sorted message items being coded to fall within said
one or more information categories of said classification scheme; and (c) locating
message items for the online users based on user search queries associated with
said one or more information categories of said classification scheme; and (d)
analyzing said user message items and/or said user search queries, including
content, authorship and codes associated with such user message items and user
search queries; wherein said predetermined search criterion and said classification
scheme are adjusted periodically based on the results of step (d).

41. The method of claim 40, wherein selected information for information categories
occurring more frequently in user search queries is retrieved at a higher priority
than information for information categories occurring less frequently.

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